High Pass Filtering to Extend Dynamic Range of Transient Digitizers.* D.J. ERSKINE, Lawrence Livermore Nat. Lab.-- In shock experiments measuring the speed of sound by catchup of the release wave, ala McQueen‡, the intensity of the light is highly unpredictable This because it varies as the 8th power of projectile velocity ($P \sim v^2$, $T \sim P$, $I \sim T^{4)}$. The large dynamic range required of the digitizing recorders is greater than that provided by 256 vertical channels of typical digitizers. We discovered that by using a high pass filter, and inverse transforming the data post-experiment, we can effectively increase the dynamic range of the digitizers dramatically. This technique can be applied to any situation where the data of interest is at the top of a pulse.

‡McQueen, R.G., J.W. Hopson, and J.N. Fritz, Rev. Sci. Instr. 53, 245 (1982).

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